

LOF et al. - 10/648,785

Attorney Docket: 081468-0305473

REMARKS

Claims 1-24 are pending. By this Amendment, the specification is amended and claims 8, 20, 22 and 23 are amended. Reconsideration in view of the amendments and following remarks is respectfully requested.

Applicants have not received the initialed, signed and dated PTO-1449 submitted with the application on August 27, 2003. The Examiner is respectfully requested to initial the references, sign and date the PTO-1449 and return a copy to the undersigned in accordance with MPEP §609.

Claims 1, 5, 7, 17, and 20-24 were rejected under 35 U.S.C. §102(b) by Moriyama et al. (U.S. Patent 4,798,470). The rejection is respectfully traversed.

Claim 1 recites an alignment tool comprising a substrate configured to hold a substrate having a substrate mark. The substrate mark may be at a different level from the rest of the surface of the substrate. An alignment system is configured to detect alignment between a reference mark and the substrate mark using an alignment beam of radiation. An optical element is removably positionable in the path of the alignment beam to adjust the focal plane of the alignment system to focus on the substrate mark at a different level from the rest of the surface of the substrate.

The Office Action on page 2, paragraph number 3, alleges that Moriyama et al. discloses an optical element 122 or 123 that is removably positionable in the path of the alignment beam to adjust the focal plane of the alignment system to focus on the substrate mark at a different level from the rest of the surface of the substrate. However, it is respectfully submitted that there is no disclosure or suggestion by Moriyama et al. of an optical element removably positionable in the path of the alignment beam, as recited in claim 1.

As disclosed in column 5, lines 36-49, the relative positions of the target mark 115 on the reticle 106 and the target marks 103 and 103' on the wafer 101 are first obtained. The projected image 126 of the target mark 115 of the reticle 106 is formed on the same plane of the through-hole 121 as the surface of the wafer 101. The relationship between the target mark 115 and the target mark 103 on the wafer 101 is shown in Figure 11. The projected image 126 of the target mark 115 on the reticle 106 and the target mark 103 on the wafer 101 are detected by mark detectors 124 and 125 through the mark detecting optical systems 122 and 123, respectfully. There is no disclosure or suggestion by Moriyama et al. that the mark

LOF et al. -- 10/648,785
Attorney Docket: 081468-0305473

detecting optical systems 122 and 123 are, or include, an optical element that is removably positionable in the path of the alignment beam to adjust the focal plane of the alignment system to focus on the substrate mark at a different level from the rest of the surface of the substrate. In particular, it is respectfully noted that column 5, lines 57-59, recite that the reticle 106 and the wafer 101 are finely moved relative to each other so that the change in position in X, Y, Z directions are zero, thus effecting alignment. There is no disclosure or suggestion of adjusting the focal plane of the alignment system to focus the substrate mark 103 or 103' at a different level from the rest of the surface of the substrate by removably positioning an optical element in the path of the alignment beam.

Claims 5, 7 and 17 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claim 1 and for the additional features recited therein.

Claim 20 recites a lithographic projection apparatus including an alignment tool including an alignment system configured to detect alignment between a reference mark and a substrate mark using an alignment beam of radiation, wherein an optical element is removably positionable in the path of the alignment beam to adjust the focal plane of the alignment system to focus on the substrate mark at a different level from the rest of the surface of the substrate.

As discussed above, there is no disclosure or suggestion by Moriyama et al. of an optical element removably positionable in the path of an alignment beam to adjust the focal plane of the alignment system to focus on the substrate mark at a different level from the rest of the surface of the substrate. Accordingly, Moriyama et al. cannot anticipate or render obvious claim 20.

Claim 21 recites additional features of the invention and is allowable for the same reasons discussed above with respect to claim 20 and for the additional features recited therein.

Claim 22 recites an alignment method comprising, *inter alia*, adjusting the focal plane of an alignment beam to focus on a substrate mark at a different level from the rest of the surface of the substrate by interposing an optical element into the alignment beam while detecting alignment.

There is no disclosure or suggestion by Moriyama et al. of adjusting the focal plane of an alignment beam to focus on a substrate mark at a different level from the rest of the surface of the substrate by interposing an optical element into the alignment beam while

LOF et al. -- 10/648,785

Attorney Docket: 081468-0305473

detecting alignment. As discussed above, Moriyama et al. move the reticle 106 and the wafer 101 relative to each other to affect alignment. Accordingly, Moriyama et al. cannot anticipate or render obvious claim 22.

Claim 23 recites a device manufacturing method comprising, *inter alia*, of an alignment beam to focus on a substrate mark at a different level from the rest of the surface of the substrate by interposing an optical element into the alignment beam while detecting alignment.

There is no disclosure or suggestion by Moriyama et al. of adjusting focal plane of an alignment beam to focus on a substrate mark at a different level from the rest of the surface of the substrate by interposing an optical element into the alignment beam while detecting alignment. Moriyama et al. affects alignment by moving the reticle and a substrate relative to each other. Accordingly, Moriyama et al. cannot anticipate or render obvious claim 23.

Claim 24 recites additional features of the invention and is allowable for the same reasons discussed above with respect to claim 23 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 1, 5, 7, 17 and 20-24 over Moriyama et al. are respectfully requested.

Claims 3, 4, 6, 8-12, 18, 19 and 22 were rejected under 35 U.S.C. §103(a) over Moriyama et al. The rejection is respectfully traversed.

Applicants respectfully note that claim 22 was previously rejected as anticipated by Moriyama et al. and again rejected as obvious over Moriyama et al.. Clarification of the status of claim 22 is respectfully requested.

Claims 3, 4, 6, 8-12, 18, 19 and 22 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claim 1 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 3, 4, 6, 8-12, 18, 19 and 22 are respectfully requested.

Claims 2 and 9-12 were rejected under 35 U.S.C. §103(a) over Moriyama et al. in view of Omata (U.S. Patent 4,616,130). The rejection is respectfully traversed.

Applicants respectfully note that claims 9-12 were previously rejected as obvious over Moriyama et al. and again are rejected as obvious over Moriyama et al. in view of Omata. Clarification of the status of claims 9-12 is respectfully requested.

LOF et al. -- 10/648,785

Attorney Docket: 081468-0305473

Claims 2 and 9-12 recite additional features of the invention and are allowable for the same reasons discussed above with respect to claim 1 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 2 and 9-12 are respectfully requested.

Applicants appreciate the indication that claims 13-16 define patentable subject matter. However, in view of the above amendments and remarks, Applicants respectfully submit that all the claims are allowable and that the entire application is in condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP



JOHN P. DARLING

Reg. No. 44482

Tel. No. (703) 905-2045

Fax No. (703) 905-2500

Date: June 21, 2005
P.O. Box 10500
McLean, VA 22102
(703) 905-2000